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EXAMINER	
RINES, ROBERT D	

ART UNIT	PAPER NUMBER
3686	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	09/996,065	ZIZZAMIA ET AL.	
	Examiner	Art Unit	
	R. DAVID RINES	3686	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/15/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Notice to Applicant

[1] This communication is in response to the amendment filed 15 July 2008. The Information Disclosure Statement (IDS) filed 15 October 2008 has been entered and considered. Claims 1, 8, 13, and 17 have been amended. Claims 1-20 are pending.

NOTE: Claims 2 and 6 are designated "currently amended" however, there are no specific amendments indicated by underlining or other designation. While this technically constitutes a non-compliant response, Examiner assumes a typographical error or oversight to be corrected on the next response.

Response to Remarks

[2] Applicant's remarks have been fully considered but they are not persuasive. The remarks will be addressed below in the order in which they appear in the response filed 15 July 2008.

Applicant remarks that the combined teachings of Summerell and Tanaka do not describe the process defined by the claimed invention.

Specifically, Applicant remarks:

"Applicants' invention is directed to embodiments of a system and method for determining the importance of variables that contribute to the overall score of a model for predicting the profitability of an insurance policy.....the scoring formula or algorithm can be selected from this larger pool of variables for their statistical significance to the likelihood that a particular policy holder with have future losses....The result is a scoring model that may be used by insurers to determine in a more precise manner the risk associated with a particular policy holder."

In response to Applicant's comments directed to the use and purpose of the claimed invention, namely, assessing risk associated with a particular insurance policy holder and evaluating the importance of individual variables that contribute to a score for predicting the profitability of an insurance policy, Examiner respectfully submits that the stated insurance applications of the

invention are not positively recited in the rejected claims (see 35 U.S.C. 101 rejection below). Examiner further notes that although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns,* 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

For Applicant's benefit, Examiner additionally notes that amendment to the claims to positively indicate how the score, recited calculations, and relative contributions of the individual variables relate to or enable the assessment of insurance profitability and risk associated with a policy holder including recitation of necessary hardware elements for performing the calculations would serve to resolve the outstanding 35 U.S.C. 101 rejections and distinguish the claimed invention from the art of record. Applicant is encouraged to contact Examiner to discuss amendments to the claims to place the case in condition for allowance. However, as presently constructed, the claims merely present a series of mathematical calculations in the abstract and fail to positively associate the recited calculations to the stated insurance-related purpose of the invention.

Applicant further remarks (in summary):

Summerell is concerned with calculating physiological age for the user but does not calculate the contribution of any of the plurality of variables based on the calculated slope and claculated deviance values. [Summerell uses] predetermined relative risk factors to modify the survival rate and mortality rate of the standard population in order to assess the physiological age of a user.

The contribution of these relative risk factors is not calculated as part of the assessment of the physiological age. Summerell is neither concern with a scoring formula nor with the importance of each contributing variable.

In response, Examiner agrees that the mathematics of Summerell do not directly mimic those presented in the claimed invention in so far as Summerell does not disclose the generation of the multivariate expression nor does Summerell describe the process of assigning weights to each of the contributory risk factors. Rather, Summerell starts with an existing multivariate expression, with weighting values already assigned to the contributory variables and employs the expression to calculate a composite score, which Summerell refers to as a physiological age. However, Examiner respectfully maintains (as set forth in the response to remarks in the Office Action mailed 19 April 2007, incorporated by reference herein) Summerell's "physiological age" value to constitutes both a "score" as well as a "variable".

Examiner directs Applicant's attention to the applied teachings of Summerell et al. at col. 16, lines 13-35 in view of the collective teachings of Summerell and particularly those at col. 15, lines 18-67 and col. 16, lines 1-12. In the noted passages, Summerell describes an equation/formula that, as Applicant acknowledges, uses deviance and slope to combine the individual contribution and effect of each wellness factor in order to derive the total impact on the survival rate. Examiner respectfully maintains that the equation provided by Summerell is setup and the associated calculations are performed with the intention of isolating and solving for the "physiological age" as the target variable. Examiner further submits that should one of

ordinary skill in the art be provided with a value for the physiological age/variable (e.g., by empirical data gathered on a representative or mean population), the same equation would be rearranged, utilizing well known mathematical practices and principles to isolate and solve for a different factor/variable (e.g., an attribute risk adjustment). Accordingly, such mathematical rearrangement would be subject to the same application of slope and deviance, noted by Applicant, to solve for the new variable (i.e. one of the predictive risk factors).

In support of the above interpretation, Examiner directs Applicant's attention to the teachings of Summerell at col. 9, lines 62-67 and col. 10, lines 1-39. In the noted passage, Summerell describes the use of a baseline group, ideally (preferred embodiment) using the mean population to determine the relative adjustments (i.e., weighting) for a given attribute. Summerell additionally notes the relationship between attribute deviation and relative risk stating, "...the higher the deviation of the relative risk from the baseline, the more the attribute is a cause of mortality. Conversely, the lower the deviation, the less the attribute is a cause or marker of mortality" (Summerell et al.; col. 10, lines 3-10). Further, Summerell notes that the relative risks for each attribute are re-calibrated using the mean population (Summerell et al.; col. 10, lines 37-39). These teachings indicate to the Examiner that Summerell's determination of the risk/attribute adjustments is accomplished using the same equation rearranged to solve for a given risk adjustment/variable using empirical data from a mean population to establish the age adjustment. Lastly, Examiner submits that Summerell's determination of relative risk adjustments for a number of attributes constitutes weighting the relative contributions of each factor at least insofar as presently claimed by Applicant.

Regarding Applicant remarks directed to the purported shortcomings of Tanaka, Examiner notes that Tanaka is applied exclusively to evidence that principles and practices for developing multivariate expressions and assigning weighting values to contributory variables are well known in the art. Accordingly, Tanaka's assumptions made within the model or outside the model as well as the process of determining the weighting values of the multivariate expression are immaterial to Examiner's rejection of the claims.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requires of this title.

[3] Claims 8-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Under the statute, the claimed invention must fall into one of the four recognized statutory classes of invention, namely, a process (or method); a machine (or system); an article of manufacture; or a composition of matter. The latter three categories define "things" or "products" while a process consists of a series of steps or acts to be performed. For purposes of determining whether a process is eligible for patent under 35 U.S.C 101, a process has been given specialized, limited meaning by the courts.

Under the guidance of Supreme Court precedent and recent Federal Circuit decisions, in order for a process to be considered eligible for patent under 35 U.S.C. 101, the process must (1) be tied to another statutory class or (2) transform underlying subject matter to a different state or thing. If neither of these requirements is met by the claim, the process is not a patent eligible process under 35 U.S.C. 101 and is accordingly rejected as being directed to non-statutory subject matter.

Claim 13 recites a series of method steps directed to "a method of evaluating the contribution of each of a plurality of predictive variables….". The method steps presented in the body of the claim fail to transform the underlying subject matter to a different state or thing and additionally fail to positively recite the use of a machine, article of manufacture, or a composition of matter in achieving the desired result. As presently constructed, the recited method steps consist of a series of mathematical calculations that result in a computed score. As recited, the method can be accomplished purely by mental processing and are therefore not specifically enabled by another recognized statutory class of invention.

Claims 14-16, by virtue of their dependence on claim 13, and when analyzed in the same manner described above with respect to claim 13, also fail to positively recite another statutory class of invention. Therefore, claims 14-16 are also rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter.

Claims 8 and 17 also recite a series of method steps which are limited to mathematical calculations conducted using the recited "multivariate statistical model". However, claims 8 and 17, in contrast to claim 13, also recite a step of "populating a database associated with the system..". While it would appear that the “system” would indicate a machine or apparatus, it is unclear as to a specific machine or apparatus "system" refers as there is no indication of system components or hardware in the remainder of either claim 8 or claim 17. Accordingly, claims 8 and 17 are rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter.

Claims 9-12 and 18-20, by virtue of their dependence on claims 8 and 17, respectively, and when analyzed in the same manner described above with respect to claims 8 and 17, also fail to positively recite another statutory class of invention. Therefore, claims 9-12 and 18-20 are also rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter.

Claims 8-20 are rejected because the claims are directed to non-statutory subject matter. As noted above, claims 8-20 recite a series of mathematical calculations, i.e., a mathematical formula. Under the guidance of Supreme Court precedent and Federal Circuit decisions, mathematical formulas alone are considered unpatentable because mathematical relationships are akin to a law of nature. Claims 8-20 present a series of mathematical relationships but fail to relate the recited mathematical algorithm/calculations to a specific function or purpose other than to indicate that the calculations are used to "evaluate the contribution of each of a plurality of variables in a statistical model”. The claims further indicate that the equation results in a score but fail to indicate a specific use for the score. Accordingly, the claims appear to be directed to

the mathematical processes/algorithm in general and thus pre-empt any and all uses of the recited algorithm.

While Examiner recognizes that claim 17 indicates that the formula is used to assess "insurance profitability", the claim fails to specifically the individual steps/calculations to the recited function of estimating insurance profitability. Therefore, Examiner considers this reference to "insurance profitability" as an incidental recitation of an intended use for the formula as the body of the claim fails to clearly indicate how the method is specifically employed to assess insurance profitability.

Examiner further notes for Applicant's benefit, amendments to clarify how the claimed mathematical relationships directly enable the assessment of "insurance profitability" would not only help to overcome the rejection under 35 U.S.C. 101 but would also serve to distinguish the claimed invention from the art of record.

Claims 8-20 are rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter because the claims are limited to the recitation of a mathematical algorithm but fail to clearly indicate the specific application or use of the algorithm and thus serve to preempt any and all uses of the recited algorithm.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

[4] Claims 1, 2, and 5-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Summerell et al. (United States Patent #5,937,387) in view of Tanaka (United States Patent Application Publication #2002/0133441).

As per (currently amended) claim 1, Summerell et al. disclose a system for calculating a composite score/contribution of variables in a scoring formula comprising a multivariate expression, comprising: a database for storing values associated with a set of variables (Summerell et al.; col. 3, lines 19-41 and col. 8, lines 8-29); at least one processor arranged to: calculate a partial derivative of the scoring formula with respect to the composite score (Summerell et al.; col. 8, lines 18-29 and col. 15, lines 35-55 and col. 16, lines 4-35); calculate a deviance value for the scoring formula with respect to the composite score (Summerell et al.; col. 9, lines 62-67, col. 10, lines 1-16, and col. 16, lines 16-35); and calculate the composite score

based on the calculated partial derivative and deviance values derived from the scoring formula with respect to the composite score (Summerell et al.; col. 16, lines 16-35 and Table 2

*Examiner considers "physiological age" to be a “composite score).

While Summerell et al. disclose a multivariate scoring formula and associated calculations directed to determining a "physiological age" (i.e., a "score"), the "physiological age" calculated by Summerell et al. is a composite score that employs variables of predetermined weights (i.e., "contribution"). Accordingly, Summerell et al. fail to disclose determination of the contribution of individual variables.

With respect to solving the equation for each of the individual variables, Summerell et al. is directed to solving the equation for the composite score as opposed to the other variables. However, Examiner maintains that solving the equation for any of the other variables merely entails a re-arrangement of the equation to solve for the other variables. Such re-arrangements are enabled by well known mathematical principles that are well known in the art. While Summerell et al. disclose the use of the equation in determining the composite score, Summerell et al. fail to disclose the generation of the multivariate expression.

However, Tanaka discloses a method and system for statistically analyzing financial databases to identify causes responsible for systematic variances. Specifically, Tanaka discloses a process of generating a multivariate statistical model from the values in the database and a scoring formula based thereon (Tanaka et al.; paragraphs [0016] [0051]). Of note, Tanaka further discloses

employing the resultant multivariate expression to determine the "relative contributions" of each of the individual data elements (i.e., individual variables) (Tanaka; paragraphs [0009] [0068]-[0070]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed well-known mathematical principles to solve for any one of the other variables as opposed to the composite score as described by Summerell et al. with the motivation of using the defined mathematical relationship to solve for another variables and of supplying new statistics for calculating health and life insurance premiums (Summerell et al.; col. 5, lines 3-15).

Further, it would have been obvious to one of ordinary skill in the art to have employed the multivariate model development strategy disclosed by Tanaka to generate the multivariate expression employed by Summerell et al. with the motivation of identifying, quantifying and ranking the data element's contribution with respect to the of the process goals (Tanaka; paragraph [0009]).

As per claim 2, Summerell et al. teaches a system wherein the processor comprises a software module that takes the first derivative of the scoring formula (Summerell et al.; col. 8, lines 18-29 and col. 15, lines 35-55 and col. 16, lines 4-35).

As per claim 5, Tanaka discloses a system further comprising means for ranking the individual variables based on the calculated contribution (Tanaka; paragraphs [0009] [0016]).

As per claim 6, Summerell et al. teaches a system wherein the processor includes a software module that receives inputs for a mean value and a standard deviation value and the deviance value is calculated (Summerell et al.; col. 8, lines 9-29 and col. 10, lines 1-39).

While Summerell et al. teaches a system/method enabled by software applications (Summerell et al.; col. 8, lines 19-24) and Summerell further teaches applying a combination of mean values and deviation values for the purpose of determining composite score as a function of a number of risk factors influencing the health risk associated with an individual (Summerell et al.; col. 10, lines 1-40 and col. 16, lines 4-35), Summerell et al. fails to explicitly state using the formula: 6 Deviance of x i = (x i - i) i where .mu..sub.1 is the mean for x.sub.1 and .sigma..sub.1 is the standard deviation for predictive variable x.sub.1.

However, because Summerell et al. applies the same variables and factors to calculations determining the overall risk associated with an individual as those set forth by the Applicant in the present application, Examiner interprets the above noted teachings of Summerell et al. to be functionally analogous to Applicant's use of a mean value and deviation values (and slope determined as a function of a variable) in determining the relative contribution of a number of risk factors to the overall risk associated with an individual. Accordingly, it would have been

obvious to one of ordinary skill in the art to have applied the mean value and deviation values to an equation determining the relative health risk associated with an individual. The motivation to perform the calculations would have been to factor average survival probability data, including recalibrating relative risks using the mean of a population and associated deviations, into determining a user's physiological age as a measure of the overall wellness of an individual (Summerell et al.; col. 10, lines 1-40 and col. 11, lines 13-39). Further motivation would have been to provide a system and method that supplies new statistics for calculating health and life insurance premiums (Summerell et al.; col. 5, lines 3-5).

Summerell et al. determine a composite score derived from predetermined weighting of the contributory variables. Summerell et al. fail to disclose determining of the contribution (i.e., weighting) of the individual variables. Summerell et al. disclose solving the equation for physiological age, i.e., "composite score". Examiner maintains that the equation could be solved for any of the additional contributory variables by re-arrangement of the equation by applying well known mathematical principles.

However, Tanaka discloses employing the resultant multivariate expression to determine the "relative contributions" of each of the individual data elements (i.e., individual variables) (Tanaka; paragraphs [0009] [0016] [0068]-[0070]).

As per claim 7, Summerell et al. disclose a system wherein the contribution is calculated for any of the plurality of variables by multiplying the slope and deviance values (Summerell et al.; col. 16, lines 13-35 *see analysis claim 6).

Regarding claims 2 and 5-7, the obviousness and motivation to combine as discussed with regard to claim 1 above are applicable to claims 2 and 5-7 and are herein incorporated by reference.

As per (currently amended) claim 8, Summerell et al. teaches a method of evaluating the contribution of each of the plurality of predictive variables to score comprising: populating a database associated with the system with a mean value and standard deviation value for each of the plurality of predictive variables (Summerell et al.; col. 3, lines 19-41, col. 8, lines 8-19, col. 10, lines 1-16, col. 16, lines 16-35); calculating a deviance value based on the mean value and the standard deviation value for the scoring formula with respect to the composite score (Summerell et al.; col. 10, lines 1-39), and multiplying the deviance value and slope value, as determined with respect to the composite score, to determine the composite score (Summerell et al.; col. 16, lines 13-35 *see analysis claim 6).

Summerell et al. determine a composite score derived from predetermined weighting of the contributory variables. Summerell et al. fail to disclose determining of the contribution (i.e., weighting) of the individual variables.

Summerell et al. fail to teach generating a multivariate statistical model from a set of values associated with a set of variables; and generating a scoring formula based thereon. Applicant has amended claim 8 with respect to the scoring formula to further specify "..said scoring formula comprising at least a sum of a plurality of predictive variables each having a weighting co-efficient" As noted above with respect to claim 1, Summerell et al. fail to disclose the generation of the multivariate expression.

However, Tanaka discloses a method and system for statistically analyzing financial databases to identify causes responsible for systematic variances. Specifically, Tanaka discloses a process of generating a multivariate statistical model from the values in the database and a scoring formula based thereon (Tanaka et al.; paragraphs [0016] [0051]). Tanaka further discloses employing the resultant multivariate expression to determine the "relative contributions" of each of the individual data elements (i.e., individual variables) (Tanaka; paragraphs [0009] [0068]-[0070]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed the multivariate model development strategy disclosed by Tanaka to generate the multivariate expression employed by Summerell et al. The motivation to combine the teachings would have been to identify, quantify, and rank the data element's contribution with respect to the of the process goals (Tanaka; paragraph [0009]) of supplying new statistics for calculating health and life insurance premiums (Summerell et al.; col. 5, lines 3-15).

As per claim 9, Summerell et al. teaches a method further comprising the step of defining at least one assumption for the mean value associated with at least one of the plurality of predictive variables (Summerell et al.; col. 16, lines 16-18).

As per claim 10, Summerell et al. teaches a method wherein the step of calculating the slope further comprises the step of calculating the first derivative of the scoring formula with respect to the predictive variable of the plurality of predictive variables that is being analyzed (Summerell et al.; col. 16, lines 4-35).

As per claim 11, Summerell et al. teaches a method wherein the deviance value is calculated as follows: 7 Deviance of x i = (x i - i) i where .mu..sub.1 is the mean for x.sub.1 and .sigma..sub.1 is the standard deviation for predicitve variable x.sub.i (Summerell et al.; col. 10, lines 1-39 and col. 16, lines 13-35 *see analysis claim 6).

As per claim 12, Tanaka teaches a method further comprising the step of ranking each of the plurality of predictive variables based on the contribution of a predictive variable to the score wherein a predictive variable having a higher calculated contribution value is assumed to have had a greater effect on the score (Tanaka; paragraphs [0009] [0068]-[0070]).

Regarding claims 9-12, the obviousness and motivation to combine as discussed with regard to claim 8 above are applicable to claims 9-12 and are herein incorporated by reference.

As per (currently amended) claim 13, Summerell et al. teaches a method of evaluating the contribution of each of a plurality of predictive variables in a statistical model comprised of a scoring formula comprising at least a sum of a plurality of predictive variables each having a weighting co-efficient comprising the steps of obtaining a mean value and a standard deviation value for each of the plurality of predictive variables (Summerell et al.; col. 9, lines 62-67 and col. 10, lines 1-40), calculating a slope value for each of the plurality of predictive variables (Summerell et al.; col. 16, lines 4-35), calculating a deviance value based on the mean value and the standard deviation value for each of the plurality of predictive variables (Summerell et al.; col. 9, lines 62-67 and col. 10, lines 1-40), and multiplying the deviance value and slope value for each of the plurality of predictive variables to quantify the contribution of each of said variables to the composite (Summerell et al.; col. 16, lines 13-35 *see analysis claim 6 *see Summerell et al. "physiological age").

Summerell et al. solves the equation for the composite score, i.e., physiological age. Accordingly Summerell et al. fails to specifically provide an example of re-arranging the equation to solve for one of the other variables. However, such mathematical techniques and principles are well known and would have been obvious to one of ordinary skill in the art with the motivation of solving for a variable other than the composite score. Summerell et al. fail to teach generation of the multivariate expression.

However, Tanaka discloses a method and system for statistically analyzing financial databases to identify causes responsible for systematic variances. Specifically, Tanaka discloses a process of generating a multivariate statistical model from the values in the database and a scoring formula based thereon (Tanaka et al.; paragraphs [0016] [0051]). Tanaka further discloses employing the resultant multivariate expression to determine the "relative contributions" of each of the individual data elements (i.e., individual variables) (Tanaka; paragraphs [0009] [0068]-[0070]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed well-known mathematical principles to solve for any one of the other variables as opposed to the composite score as described by Summerell et al. with the motivation of using the defined mathematical relationship to solve for another variables and of supplying new statistics for calculating health and life insurance premiums (Summerell et al.; col. 5, lines 3-15).

Further, it would have been obvious to one of ordinary skill in the art to have employed the multivariate model development strategy disclosed by Tanaka to generate the multivariate expression employed by Summerell et al. with the motivation of identifying, quantifying and ranking the data element's contribution with respect to the of the process goals (Tanaka; paragraph [0009]).

As per claim 14, Summerell et al. teaches a method further comprising the step of populating a storage means with the mean value and standard deviation values for each of the plurality of variables (Summerell et al.; col. 3, lines 19-41, col. 8, lines 8-19, col. 10, lines 1-16, col. 16, lines 16-35).

Regarding claim 14, the obviousness and motivation to combine as discussed with regard to claim 13 above are applicable to claim 14 and are herein incorporated by reference.

[5] Claims 3-4 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Summerell et al., in view of Tanaka, and further in view of Hammond et al. (United States Patent #5,613,072).

Regarding claims 3-4 and 15-16, while Summerell et al. determines the overall health risk associated an individual as a function of an individual's calculated or estimated physiological age and further indicates that the performed calculations would be of assistance to an insuring entity when determining premiums for an insurance policy (Summerell et al.; col. 5, lines 3-13), Summerell et al. fails to specifically relate the health assessment score to a specific premium.

However, as is evidenced by Hammond et al., the translation of a rating score or risk assessment score into a premium amount is well-known in the art (Hele et al.; paragraphs [0077] [0097]).

Accordingly, as per claim 3, Hammond et al.teaches a system wherein the plurality of variables describe characteristics of at least one of an existing policyholder and potential policyholder and the scoring formula is used to generate a score reflective of the expected loss/premium ratio for an insurance policy (Hammond et al.; Abstract and col. 10, lines 4-37 and col. 20, lines 14-36).

As per claim 4, Hammond et al.teaches a system wherein the premium for the insurance policy is based on the score (Hammond et al.; Abstract and col. 10, lines 4-37 and col. 20, lines 14-36).

Regarding claims 3-4, the obviousness and motivation to combine as discussed with regard to claim 1 above are applicable to claim 3-4 and are herein incorporated by reference.

As per claim 15, Hammond et al.teaches a method wherein the statistical model is used to assess the profitability of an insurance policy and each of the plurality of variables is associated with at least one of the policyholder and item to be insured (Hammond et al.; Abstract and col. 10, lines 4-37 and col. 20, lines 14-36).

As per claim 16, Hammond et al.teaches a method wherein a score generated by the model determines the price for the insurance policy and the contribution is used to identify which variables had the greatest effect on the price (Hammond et al.; Abstract and col. 10, lines 4-37 and col. 20, lines 14-36).

Regarding claims 15-16, the obviousness and motivation to combine as discussed with regard to claim 13 above are applicable to claim 15-16 and are herein incorporated by reference.

As per (currently amended) claim 17, Summerell et al. teaches, in system that employs a statistical model comprised of a scoring formula having a plurality of predictive variables for generating a score that is representative of a risk associated with an insurance policyholder and for pricing a particular coverage based on the score, a method of quantifying the contribution of each of the plurality of predictive variables to the score generated by the model comprising: populating a database associated with the system with a mean value and standard deviation value for each of the plurality of predictive variables (Summerell et al.; col. 3, lines 19-41, col. 8, lines 8-19, col. 10, lines 1-16, col. 16, lines 16-35); calculating a deviance value based on the mean value and the standard deviation value for the scoring formula with respect to the composite score (Summerell et al.; col. 10, lines 1-39), and multiplying the deviance value and slope value, as determined with respect to the composite score, to determine the composite score (Summerell et al.; col. 16, lines 13-35 *see analysis claim 6).

Summerell et al. determine a composite score derived from predetermined weighting of the contributory variables. Summerell et al. fail to disclose determining of the contribution (i.e., weighting) of the individual variables.

Summerell et al. fail to disclose generating a multivariate statistical model from a set of values associated with insurance policy risk to identify predictive variables.

However, Tanaka discloses a method and system for statistically analyzing financial databases to identify causes responsible for systematic variances. Specifically, Tanaka discloses a process of generating a multivariate statistical model from the values in the database and a scoring formula based thereon (Tanaka et al.; paragraphs [0016] [0051]). Tanaka further discloses employing the resultant multivariate expression to determine the "relative contributions" of each of the individual data elements (i.e., individual variables) (Tanaka; paragraphs [0009] [0068]-[0070]).

Applicant has amended claim 17 with respect to the profitability scoring formula to further specify "said profitability scoring formula comprising at least a sum of the plurality of variables each having a weighting co-efficient"

Regarding the profitability scoring formula, while Summerell et al. disclose employing the scoring formula to assist in the determination of insurance premiums, Summerell et al. fail to disclose an equation specifically directed to insurance profitability. Tanaka further fails to disclose a specific insurance profitability application of the multivariate expressions.

However, Hammond et al. discloses multivariate analysis of insurance related data sets directed to premium determination and expected loss associated with the insurance plan (Hammond et al.; Abstract and col. 10, lines 4-37 and col. 20, lines 14-36).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed the multivariate model development strategy disclosed by Tanaka to generate the multivariate expression employed by Summerell et al. The motivation to combine the teachings would have been to identify, quantify, and rank the data element's contribution with respect to the of the process goals (Tanaka; paragraph [0009]) of supplying new statistics for calculating health and life insurance premiums (Summerell et al.; col. 5, lines 3-15).

The motivation to combine the additional teachings provided by Hammond et al., would have been to apply statistical model techniques to identify claim characteristics which are significant in affecting claim costs thereby reducing losses and improving the overall financial solvency of the insurance carrier (Hammond et al.; col. 2, lines 9-14 and col. 2, lines 27-30)

As per claim 18, Tanaka teaches a method further comprising the step of ranking each of the plurality of variables based on the quantified contribution as calculated for each of the plurality of predictive variables (Tanaka; paragraphs [0009] [0016] [0068]-[0070])

As per claim 19, Summerell et al. teaches a method wherein the step of calculating the slope further comprises the step of calculating the first derivative of the scoring formula with respect to the composite score (Summerell et al.; col. 8, lines 18-29 and col. 15, lines 35-55 and col. 16, lines 4-35).

As per claim 20, Summerell et al. teaches a method wherein the deviance value is calculated as follows: 8 Deviance of x i = (x i - i) i where .mu..sub.i is the mean for x.sub.1 and .sigma..sub.i is the standard deviation for predictive variable x.sub.1 (Summerell et al.; col. 10, lines 1-39 and col. 16, lines 13-35 *see analysis claim 6).

Regarding claims 18-20 the obviousness and motivation as discussed with regard to claim 17 above are applicable to claims 18-20 and are herein incorporated by reference.

Conclusion

[6] Any inquiry concerning this communication or earlier communications from the examiner should be directed to R. DAVID RINES whose telephone number is (571)272-5585. The examiner can normally be reached on 8:30am - 5:00pm Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, GERALD J. O'CONNOR can be reached on 571-272-6787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/R. DAVID RINES/
Examiner, Art Unit 3686